AMENDMENTS TO THE CLAIMS

1.–25. (Canceled)

26. **(Currently Amended)** A method for determining, in a mammal, the susceptibility to a disease associated with β-amyloid formation and/or aggregation, for determining, in a mammal, the risk of developing a disease associated with β-amyloid formation and/or aggregation, for screening of the clearance of β-amyloid deposition in a mammal, and/or for predicting the level of β-amyloid burden in a mammal, said method comprising:

(a) determining, in a first sample obtained from said mammal, the amount of N-terminal truncated and/or post-translationally modified β-amyloid variant~~, the amount of N-terminal APP soluble fragment, or the amount of antibody specific for said β-amyloid variant or said APP soluble fragment~~;

(b) comparing the amount determined in step (a) with the amount of said N-terminal truncated and/or post-translationally modified β-amyloid variant~~, the amount of N-terminal APP soluble fragment, or the amount of antibody specific for said β-amyloid variant or said APP soluble fragment in a second sample obtained from a control mammal~~;

(c) concluding, from the comparison in step (b), whether the mammal is susceptible to a disease associated with β-amyloid formation and/or aggregation, or whether the mammal is at risk of developing a disease associated with β-amyloid formation and/or aggregation, whether the β-amyloid deposition in the mammal is cleared, or what the level of β-amyloid burden is in said mammal.

27. (Cancelled)

28. (Cancelled)

29. **(Currently amended)** The method of claim 26 comprising:

(a) determining in the first sample, the amount of N-terminal truncated and/or post-translationally modified β-amyloid variant ~~or the amount of N-terminal APP soluble fragment~~;

(b) comparing the amount determined in step (a) with the amount of N-terminal truncated and/or post-translationally modified β-amyloid variant ~~or the amount of N-terminal APP soluble fragment,~~ in the second sample;

(c) concluding, from the comparison of step (b), whether the mammal is susceptible to a disease associated with β-amyloid formation and/or aggregation, whether the mammal is at risk of developing a disease associated with β-amyloid formation and/or aggregation, whether the β-amyloid deposition in the mammal is cleared, and/or what the level of β-amyloid burden is in the mammal.

30. **(Currently amended)** The method of claim 29 for predicting the level of β-amyloid burden in a mammal, the method <u>further</u> comprising:

(a) administering to said mammal a composition for eliciting an immune response or a therapeutic composition comprising an N-terminal truncated and/or post-translational modified Aβ peptide~~, comprising an antibody that specifically recognizes an N-terminal truncated and/or post-translationally modified Aβ peptide, or comprising a nucleic acid preparation encoding an N-terminal truncated and/or post-translational modified Aβ peptide~~;

(b) determining in a biological fluid sample obtained from said mammal the amount of N-terminal truncated and/or post-translationally modified β-amyloid variant;

(c) comparing the amount determined in step (b) with the amount of N-terminal truncated and/or post-translationally modified β-amyloid variant in a biological fluid sample obtained from a control mammal;

(d) concluding, from the comparison in step (c) what the level of β-amyloid burden is in said mammal.

31. **(Previously presented)** The method of claim 26 wherein said N-terminal truncated β-amyloid variant starts at position 2, 3, 4, 5, 6, 7, 8, 9, or 10 of β-amyloid.

32. **(Previously presented)** The method of claim 31 wherein said N-terminal truncated β-amyloid variant starts at position 2, 3, 4, 5, 8, 9, or 10 of β-amyloid.

33. **(Previously presented)** The method of claim 32 wherein said N-terminal truncated β-amyloid variant starts at position 3, 4, 5, 8, or 9 of β-amyloid.

34. **(Previously presented)** The method of claim 31 wherein said β-amyloid variant is selected from the group consisting of Aβ(2-42), Aβ(3-42), Aβ(4-42), Aβ(5-42), Aβ(6-42), Aβ(7-42), Aβ(8-42), Aβ(9-42) and Aβ(10-42).

35. **(Previously presented)** The method of claim 26 wherein the post-translationally modified β-amyloid variant is modified by methylation or pyroglutamylation.

36. **(Previously presented)** The method of claim 35 wherein the methylation is present at position 1, 2, 4, or 6 of an N-terminal truncated β-amyloid variant.

37. **(Previously presented)** The method according to claim 35 further characterized in that the pyroglutamylation is present at position 3 of an N-terminal truncated β-amyloid variant starting at position 3 of β-amyloid.

38. **(Withdrawn)** The method of claim 26 wherein the C-terminal end of said N-terminal APP soluble fragment consists of position 1, 1 to 2, 1 to 3, 1 to 4, 1 to 5, 1 to 6, 1 to 7, 1 to 8, or 1 to 9 of β-amyloid.

39. **(Currently amended)** The method of claim 26 for determining in a mammal, the susceptibility to a disease associated with β-amyloid formation and/or aggregation, or for determining, in a mammal, the risk of developing a disease associated with β-amyloid formation and/or aggregation comprising:

(a) determining, in a sample obtained from said mammal: the amount of antibody or reactive T-cells specific for an N-terminal truncated and/or post-translationally modified Aβ peptide; ~~and/or specific for an N-terminal APP soluble fragment, or a C-terminal fragment thereof;~~

(b) comparing the amount determined in step (a) with the amount of the antibody or reactive T-cells in a control mammal;

(c) concluding, from the comparison in step (b), whether the mammal is susceptible to a disease associated with β-amyloid formation and/or aggregation or whether the mammal is at risk of developing a disease associated with β-amyloid formation and/or aggregation;

wherein an increased amount of antibody or reactive T-cells specific for (i) N-terminal truncated and/or post-translationally modified Aβ peptide~~; and/or (ii) for N-terminal APP soluble fragment, or for a C-terminal fragment thereof,~~ is an indication that the mammal is susceptible to, or at risk of, developing a disease associated with Aβ formation and/or aggregation.

40. **(Previously presented)** The method of claim 26 wherein at least one of the first and second samples is a brain extract sample or a body fluid sample.

41. **(Previously presented)** The method 40 wherein the body fluid sample is a blood sample or a cerebrospinal fluid (CSF) sample.

42. **(Previously presented)** The method of claim 26 wherein the disease associated with β-amyloid formation and/or aggregation is Alzheimer's disease (AD).

43. **(Previously presented)** The method of claim 26 wherein the susceptibility to Alzheimer's disease (AD) or the risk of developing AD is determined by detecting Aβ(5-42) or Aβ(8-42) in a body fluid sample obtained from the mammal.

44. **(Currently amended)** A diagnostic or theranostic kit <u>for use in the method of claim 26</u> comprising one or more of the following:

(a) a preparation of an N-terminal truncated and/or post-translationally modified Aβ peptide; <u>and</u>

(b) ~~a preparation of an N-terminal APP soluble fragment, or C-terminal fragment thereof; and~~

~~(c)~~ one or more antibodies specifically recognizing an N-terminal truncated and/or post-translationally modified β-amyloid variant~~; or specifically recognizing an N-terminal APP soluble fragment~~.

45. **(Currently amended)** The kit of 44 comprising an antibody specifically recognizing an N-terminal truncated and/or post-translationally modified β-amyloid variant ~~and/or an antibody specifically recognizing an N-terminal APP soluble fragment~~.

46. **(Currently amended)** The kit of claim 45 comprising:

- an antibody (primary antibody) which forms an immunological complex with the N-terminal truncated and/or post-translationally modified Aβ peptide variant ~~or the N-terminal APP soluble fragment~~ to be detected;
- an antibody (secondary antibody) which specifically recognizes the N-terminally truncated and/or post-translationally modified Aβ peptide variant ~~or the N-terminal APP soluble fragment~~ to be detected:
- a marker either for specific tagging or coupling with said secondary antibody;
- appropriate buffer solution for carrying out the immunological reaction between the primary antibody and the N-terminal truncated and/or post-translationally modified Aβ peptide variant ~~or the N-terminal APP soluble fragment~~, between the secondary antibody and the primary antibody-N-terminal truncated and/or post-transitionally modified Aβ peptide variant ~~or N-terminal APP soluble fragment complex~~ and/or between the bound secondary antibody and the marker; and
- optionally, a purified N-terminal truncated and/or post-translationally modified Aβ peptide ~~or a purified N-terminal APP soluble fragment (or a C-terminal fragment thereof)~~.

47. **(Previously presented)** The kit of claim 45 that comprises an antibody that specifically recognizes an N-terminal truncated β-amyloid variant starting at position 5, 6, 8, or 9 of β-amyloid.

48. **(Previously presented)** The kit according of claim 45, comprising an antibody that specifically recognizes Aβ(5-42) or Aβ(8-42).

49. **(Currently amended)** The kit of claim 45 that comprises a preparation of an N-terminal truncated and/or post-translationally modified Aβ peptide~~; or a preparation of an N-terminal APP soluble fragment, or a C-terminal fragment thereof~~.

50. **(Withdrawn)** A method for the preparation of an antibody that specifically recognizes an N-terminal truncated and/or post-translationally modified β-amyloid variant, the method comprising:

(a) immunizing an animal with a preparation of an N-terminal truncated and/or post-translationally modified Aβ peptide; or a nucleic acid preparation encoding an N-terminal truncated and/or post-translational modified Aβ peptide;

(b) obtaining antibodies generated by the immunization in step (a);

(c) screening the antibodies obtained in step (b) for their specific recognition of N-terminal truncated and/or post-translationally modified β-amyloid variants.

51. **(Withdrawn)** The method of claim 50 wherein the antibody specifically recognizes an N-terminal truncated β-amyloid variant starting at position 5, 6, 8, or 9 of β-amyloid.

52. **(Withdrawn)** An antibody obtained by the method of claim 50.

53. **(Withdrawn)** A method for the preparation of an antibody that specifically recognizes an N-terminal APP soluble fragment, the method comprising:

(a) immunizing an animal with a preparation of N-terminal APP soluble fragment, or a C-terminal fragment thereof; or with a nucleic acid preparation encoding an N-terminal APP soluble fragment, or a C-terminal fragment thereof;

(b) obtaining the antibodies generated by the immunization in step (a);

(c) screening the antibodies obtained in step (b) for their specific recognition of an N-terminal APP soluble fragment.

54. **(Withdrawn)** An antibody obtained by the method of claim 53.